

said recovery column through a lower portion thereof, and unreacted vinyl acetate in the solution is taken out of said recovery column with the vapor of the alcohol-based solvent through an upper portion thereof;

wherein said alcohol-based solvent is deoxidized in advance and an oxygen concentration in said alcohol-based solvent is not more than 60 ppm when said alcohol-based solvent is used in recovering said unreacted vinyl acetate.

2. (Amended) The method according to claim 1, wherein said oxygen concentration is not more than 30 ppm.

3. (Amended) The method according to claim 1, wherein an oxygen concentration in said alcohol-based solvent for copolymerizing is not more than 15 ppm.

4. (Amended) A method for producing a saponified ethylene-vinyl acetate copolymer, comprising:

copolymerizing ethylene and vinyl acetate in an alcohol-based solvent to obtain a solution containing an ethylene-vinyl acetate copolymer;

recovering unreacted vinyl acetate from said solution after copolymerizing; and

saponifying said ethylene-vinyl acetate copolymer;

wherein said solution is introduced into a recovery column through an upper portion thereof, a vapor of an alcohol-based solvent is introduced into said recovery column through a lower portion thereof, a solution comprising said ethylene-vinyl acetate copolymer is taken out of the recovery column through a lower portion thereof, and unreacted vinyl acetate in the solution is taken out of said recovery column with the vapor of the alcohol based solvent through an upper portion thereof,

wherein said alcohol-based solvent is deoxidized in advance and an oxygen concentration in said alcohol-based solvent is not more than 60 ppm when said alcohol-based

solvent is used in recovering said unreacted vinyl acetate.

5. (Amended) The method according to claim 4, wherein a saponification degree of said saponified ethylene-vinyl acetate copolymer is at least 90 mol %.

6. (Amended) The method according to claim 4, wherein said oxygen concentration is not more than 30 ppm.

7. (Amended) The method according to claim 4, wherein an oxygen concentration in said alcohol-based solvent for copolymerizing is not more than 15 ppm.

Please add the following new Claims:

8. (New) The method according to claim 1, wherein said alcohol-based solvent is deoxidized in advance of said copolymerizing.

9. (New) The method according to claim 4, wherein said alcohol-based solvent is deoxidized in advance of said copolymerizing.

10. (New) The method according to claim 1, wherein said alcohol-based solvent is deoxidized in advance of said recovering.

11. (New) The method according to claim 4, wherein said alcohol-based solvent is deoxidized in advance of said recovering.

12. (New) The method according to claim 1, wherein said alcohol-based solvent comprises a member selected from the group consisting of an alcohols having 1 to 4 carbon atoms and mixtures thereof.

13. (New) The method according to claim 4, wherein said alcohol-based solvent comprises a member selected from the group consisting of an alcohols having 1 to 4 carbon atoms and mixtures thereof.

14. (New) The method according to claim 1, wherein said ethylene-vinyl acetate

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copolymer further comprises, in copolymerized form, a comonomer selected from the group consisting of  $\alpha$ -olefins, unsaturated acids, salts of unsaturated acids, anhydrides of unsaturated acids, monoalkyl esters of unsaturated acids and dialkyl esters of unsaturated acids, ethylenically unsaturated nitriles, ethylenically unsaturated amides, olefin sulfonic acids, salts of olefin sulfonic acids, alkyl vinyl ethers, vinyl ketone, N-vinylpyrrolidone, vinyl chloride and vinylidene chloride.

15. (New) The method according to claim 4, wherein said ethylene-vinyl acetate copolymer further comprises, in copolymerized form, a comonomer selected from the group consisting of  $\alpha$ -olefins, unsaturated acids, salts of unsaturated acids, anhydrides of unsaturated acids, monoalkyl esters of unsaturated acids and dialkyl esters of unsaturated acids, ethylenically unsaturated nitriles, ethylenically unsaturated amides, olefin sulfonic acids, salts of olefin sulfonic acids, alkyl vinyl ethers, vinyl ketone, N-vinylpyrrolidone, vinyl chloride and vinylidene chloride.

16. (New) The method according to claim 1, wherein an ethylene content of said ethylene-vinyl acetate copolymer is at least 20 mol% but not more than 70 mol%.

17. (New) The method according to claim 4, wherein an ethylene content of said ethylene-vinyl acetate copolymer is at least 20 mol% but not more than 70 mol%.

18. (New) The method according to claim 4, wherein a melt index of said saponified ethylene-vinyl acetate copolymer is from 0.1 to 200g/min, as measured at 190°C under a load of 2160g.

19. (New) The method according to claim 4, further comprising:  
mixing said saponified ethylene-vinyl acetate copolymer with a thermoplastic resin.

### **BASIS FOR THE AMENDMENT**

Claims 1 and 4 have been amended to clarify the claim language and as further supported at page 2, lines 24-30 of the specification.

Claims 8-19 have been added.

New Claims 8-11 are supported at page 3, lines 16-20.

New Claims 12 and 13 are supported at page 3, lines 11-15.

New Claims 14 and 15 are supported at page 3, line 30 to page 4, line 5.

New Claims 16 and 17 are supported at page 4, lines 6-8.

New Claim 18 is supported at page 6, lines 6-8.

New Claim 19 is supported at page 6, lines 23 and 24.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-19 will now be active in this application.

### **REQUEST FOR RECONSIDERATION**

Applicants wish to thank Examiner Reddick for her helpful and courteous discussion with Applicants' Representative on February 4, 2003. During this discussion it was noted that in the present invention as set forth in amended Claims 1 and 4, the alcohol based solvent is deoxidized in advance when used in recovering the unreacted vinyl acetate and that it has a specified oxygen content of not more than 60 ppm. In contrast, in U.S. 6,288,165, deoxidizing of the gas above the solution occurs after the polymerization vessel is charged with vinyl acetate and methanol (Example 1, col. 9, line 37), and during the saponification (Example 1, col. 9, lines 65 and 66). The same Example 1 is used in U.S. 5, 744, 547 (columns 9 and 10). The Examiner voiced her concern that the methanolic solution that is

used during the recovery of the unreacted vinyl acetate is the same methanolic solution that was used during the polymerization. In the references, the air in the reaction vessel is replaced by nitrogen (U.S. 6,288,165, col. 9, lines 37 and 38). None of the solution used during the polymerization, or the solvent added after the polymerization or the methanol blown through the lower part of the column for recovery of unreacted vinyl acetate of Moritani et al (U.S. 5,744,547 and U.S. 6,288,165) can have the claimed oxygen content for the following reasons.

1.) The methanol vapor blown through the lower part of the column (U.S. 6,288,165, col. 9, lines 50-54) is not deoxidized at all and thus cannot have the claimed oxygen content.

2.) The solution used during the polymerization is not treated by bubbling nitrogen through it. Replacing air in the gas phase by nitrogen might prevent the oxygen concentration from increasing. However, to achieve a low oxygen concentration of 60 ppm or less in the solvent itself, a direct operation such as bubbling in the liquid phase or adding an oxygen absorbent into the liquid phase is necessary. This is described at page 2, lines 31 to 35 of the specification. The polymerization solution of Moritani et al merely contacts a non-oxidizing gas. However, this does not mean that the solution is deoxidized. Thus, the claimed oxygen concentration cannot be achieved.

In addition, the Examples and the Comparative Example of the specification show that a low yellow index of the copolymer is achieved when the oxygen is properly removed from the methanol used in the recovery of the unreacted vinyl acetate. The yellow index of Examples 1 and 2 according to the present invention is 9 and 13, respectively, while the yellow index of Comparative Example 1 is 20 and this copolymer is no longer white but has a yellowish hue (pages 8 and 9 of the specification).

Further, even if the methanol solution treated during the polymerization had the

claimed oxygen content it is unlikely that the methanol from this solution would be separated and used as solvent in the recovery of the unreacted vinyl acetate. There is simply no disclosure or suggestion that the methanol used for the recovery of the unreacted vinyl acetate is deoxidized and has the claimed oxygen content.

Extracting the polymerization solution from the vessel and separating methanol from various impurities is troublesome to a person skilled in the art. The cited references do not provide any motivation to do these complicated steps. The cited references fail to suggest deoxidizing the alcohol-based solvent to be introduced the recovery column.

3.) After the polymerization, additional methanol solution is added in Moritani et al, which is not purged with nitrogen (U.S. 6,288,165, col. 9, lines 41-44). Thus, the solution used during the recovery is not properly deoxidized.

Therefore, the rejection of Claims 1-7 under 35 U.S.C. §102(b) over Moritani et al (U.S. 5,744,547 and U.S. 6,288,165) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

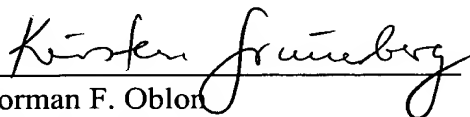
The rejection of Claims 1-7 under 35 U.S.C. §112, 2<sup>nd</sup> paragraph, is obviated by the amendment of Claims 1 and 4.

As suggested by the Examiner, Applicants will provide Formal Drawing once the application has been allowed.

Applicants submit that the present application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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